Government of Pakistan

National Vocational and Technical Training Commission

Prime Minister's Hunarmand Pakistan Program

"Skills for All"

Course Contents / Lesson Plan

Course Title: Data mining / Business intelligence

Duration: 6 Months

Revised Edition

Trainer Name	
Course Title	**Data mining / Business intelligence**
Objectives and Expectations	**Employable skills and hands-on practice for Advanced Welding** Business intelligence is required at every stage of a company's development, including planning, growth, scalability, and day-to-day decision-making. The students will discover about the data mining and how to build intelligent systems. Students will also learn how to develop and build a dashboard by selecting the appropriate KPIs and balancing all of the company's important prospects. Data and its storage are the foundations of business intelligence. Students will study about many forms of data and how they're kept in databases. They will learn the fundamentals of data storage. Because of the massive amounts of data created by civilization, data mining is crucial. Students will learn how to put this massive amount of data to work in commercial applications. **Main Expectations:** In short, the course under reference should be delivered by professional instructors in such a robust hands-on manner that the trainees are comfortably able to employ their skills for earning money (through wage/self-employment) at its conclusion. This course thus clearly goes beyond the domain of the traditional training practices in vogue and underscores an expectation that a market-centric approach will be adopted as the main driving force while delivering it. The instructors should therefore be experienced enough to be able to identify the training needs for the possible market roles available out there. Moreover, they should also know the strengths and weaknesses of each trainee to prepare them for such market roles during/after the training. i. Specially designed practical tasks to be performed by the trainees have been included in the Annexure-I to this document. The record of all tasks performed individually or in groups must be preserved by the management of the training Institute clearly labeling name, trade, session, etc so that these are ready to be physically inspected/verified through monitoring visits from time to time. The weekly distribution of tasks has also been indicated in the weekly lesson plan given in this document. ii. To materialize the main expectations, a special module on **Job Search & Entrepreneurial Skills** has been included in the latter part of this course (5th & 6th month) through which, the trainees will be made aware of the Job search techniques in the local as well as international job markets (Gulf countries). Awareness around the visa process and immigration laws of the most favored labor destination countries also form a part of this module. Moreover, the trainees would also be encouraged to venture into self-employment and exposed to the main requirements in this regard. It is also expected that a sense of civic duties/roles and responsibilities will also be inculcated in the trainees to

make them responsible citizens of the country.

iii.   A module on **Work Place Ethics** has also been included to highlight the importance of good and positive behavior in the workplace in the line with the best practices elsewhere in the world. An outline of such qualities has been given in the Appendix to this document. Its importance should be conveyed in a format that is attractive and interesting for the trainees such as through PPT slides +short video documentaries. Needless to say that if the training provider puts his heart and soul into these otherwise non-technical components, the image of the Pakistani workforce would undergo a positive transformation in the local as well as international job markets.

To maintain interest and motivation of the trainees throughout the course, modern techniques such as:
- Motivational Lectures
- Success Stories
- Case Studies

These techniques would be employed as an additional training tool wherever possible (these are explained in the subsequent section on Training Methodology).

Lastly, evaluation of the competencies acquired by the trainees will be done objectively at various stages of the training and a proper record of the same will be maintained. Suffice to say that for such evaluations, practical tasks would be designed by the training providers to gauge the problem-solving abilities of the trainees.

(i)   Motivational Lectures

The proposed methodology for the training under reference employs motivation as a tool. Hence besides the purely technical content, a trainer is required to include elements of motivation in his/her lecture. To inspire the trainees to utilize the training opportunity to the full and strive towards professional excellence. Motivational lectures may also include general topics such as the importance of moral values and civic role & responsibilities as a Pakistani. A motivational lecture should be delivered with enough zeal to produce a deep impact on the trainees. It may comprise of the following:

- Clear Purpose to convey the message to trainees effectively.
- Personal Story to quote as an example to follow.
- Trainees fit so that the situation is actionable by trainees and not represent a just idealism.
- Ending Points to persuade the trainees on changing themselves.

A good motivational lecture should help drive creativity, curiosity, and spark the desire needed for trainees to want to learn more.

The impact of a successful motivational strategy is amongst others commonly visible in increased class participation ratios. It increases the trainees' willingness to be engaged on the practical tasks for a longer time without boredom and loss of interest because they can see in their mind's eye where their hard work would take them in short (1-3 years); medium (3 -10 years) and long term (more than 10 years).

As this tool is expected that the training providers would make arrangements for regular well planned motivational lectures as part of a coordinated strategy interspersed throughout the training period as suggested in the weekly lesson plans in this document.

Course-related motivational lectures online link is available in **Annexure-II**.

(ii) Success Stories

Another effective way of motivating the trainees is using Success Stories. Its inclusion in the weekly lesson plan at regular intervals has been recommended till the end of the training.

A success story may be disseminated orally, through a presentation, or using a video/documentary of someone that has risen to fortune, acclaim, or brilliant achievement. A success story shows how a person achieved his goal through hard work, dedication, and devotion. An inspiring success story contains compelling and significant facts articulated clearly and easily comprehendible words. Moreover, it is helpful if it is assumed that the reader/listener knows nothing of what is being revealed. The optimum impact is created when the story is revealed in the form of:-

- Directly in person (At least 2-3 cases must be arranged by the training institute)
- Through an audio/ videotaped message (2-3 high-quality videos must be arranged by the training institute)

It is expected that the training provider would collect relevant high-quality success stories for inclusion in the training as suggested in the weekly lesson plan given in this document.

Suggestive structure and sequence of a sample success story and its various shapes can be seen in **Annexure III**.

(iii) Case Studies

Where a situation allows, case studies can also be presented to the trainees to widen their understanding of the real-life specific problem/situation and to explore the solutions.

In simple terms, the case study method of teaching uses a real-life case example/a typical case to demonstrate a phenomenon in action and explain theoretical as well as practical aspects of the knowledge related to the same. It is an effective way to help the trainees comprehend in depth both the theoretical and practical aspects of the complex phenomenon in depth with ease. Case teaching can also stimulate the trainees to participate in discussions and thereby boost their confidence. It also makes the classroom atmosphere interesting thus maintaining the trainee interest in training till the end of the course.

Depending on suitability to the trade, the weekly lesson plan in this document may suggest case studies be presented to the trainees. The trainer may adopt a PowerPoint presentation or video format for such case studies whichever is deemed suitable but only those cases must be selected that are relevant and of a learning value.

The Trainees should be required and supervised to carefully analyze the cases.

For this purpose, they must be encouraged to inquire and collect specific information/data, actively participate in the discussions, and intended solutions

	to the problem/situation.
	
	Case studies can be implemented in the following ways: -
	
	   i. A good quality trade-specific documentary (At least 2-3 documentaries must be arranged by the training institute)
	
	   ii. Health & Safety case studies (2 cases regarding safety and industrial accidents must be arranged by the training institute)
	
	   iii. Field visits (At least one visit to a trade-specific major industry/ site must be arranged by the training institute)

Entry-level of trainees	Intermediate
Learning Outcomes of the course	By the end of this course, students will be able to: • Gain a working knowledge of data mining techniques • Learn to design and implement algorithms to apply techniques in a • practical fashion • Understand which algorithms to apply to what kind of databases to • obtain desired useful knowledge about the data • Evaluate the performance of different data-mining algorithms • Develop practical applications utilizing modern tools • Deployment of data mining applications to industry
Course Execution Plan	The total duration of the course: **6 months (26 Weeks)** Class hours: **4 hours per day** Theory: **20%** Practical: **80%** Weekly hours: **20 hours per week** Total contact hours: **520 hours**
Companies offering jobs in the respective trade	1. Software houses 2. Telecom industries 3. Government Institutes 4. Stock exchange 5. Business consultant companies 6. Financial industry 7. All industries
Job Opportunities	The need for data mining professionals is expected to increase by 20% over the next five years. As more organizations in a number of areas turn to data to enhance sales and profits, eliminate inefficiencies, and compete in a more technologically savvy world, this trend is expected to continue. Because the data mining specialist is an important part of the data science team, this role is going to be valued substantially more in the coming years at businesses of all sizes. Data mining is highly useful in the following domains. • Market Analysis and Management • Corporate Analysis & Risk Management • Fraud Detection

	There are also opportunities for start-up entrepreneurship due to the high demand in the market in following designated jobs; • Data analyst • Data scientist • Data mining specialist • Power BI developer • Intelligence Analyst • Business Intelligence Analyst • Business Analyst • Data developer / Analyst • Associate data scientist • Data mining professional
No of Students	25
Learning Place	Classroom / Lab
Instructional Resources	1. https://support.microsoft.com/en-us/office/create-and-share-a-dashboard-with-excel-and-microsoft-groups-ad92a34d-38d0-4fdd-b8b1-58379aae746e 2. https://docs.microsoft.com/en-us/power-bi/connect-data/desktop-python-scripts 3. https://www.youtube.com/watch?v=RM8T1eYBjQY 4. https://www.youtube.com/watch?v=n-y432o5C9o 5. https://www.youtube.com/watch?v=K74_FNnlIF8 6. https://www.youtube.com/watch?v=psvtzudUO7s 7. https://www.youtube.com/watch?v=2btS31AU3Iw 8. https://help.tableau.com/current/guides/get-started-tutorial/en-us/get-started-tutorial-connect.htm 9. Development Platform: 10. https://github.com/ , 11. https://stackoverflow.com/, 12. Learning Material: 13. https://www.tutorialspoint.com/data_mining/index.htm 14.

MODULES

Scheduled Weeks	Module Title	Learning Units	Remarks

Week 1	**Orientation/Course Introduction**
	
	Introduction to Data mining/ Business Intelligence
		• **Motivational Lecture (***For further detail please see Page No: 3& 4*)
		• **Job market**
		• **Course Applications**
		• **Institute/work ethics**
		  ▪ Data Mining need and motivation
		  ▪ Overview of Data mining process
		  ▪ Overview of Data mining tasks
		  ▪ Overview of Functionalities
		  ▪ Overview of its Applications and
		  ▪ examples
		  ▪ Over view of Business Intelligence
		  ▪ Need of BI
		  ▪ IT role in BI
		  ▪ Benefits of BI
			Home Assignment
			
			• **Task 1**
			• **Task 2**
			
			Details may be seen at Annexure-I

Week 2	**MS Excel**	• **Success stories (***For further detail please see Page No: 3& 4*)
		
		Students are introduced to:
		  ▪ Introduction of MS Excel
		  ▪ Modifying a worksheet
		  ▪ Performing calculation
		  ▪ Calculating data with advanced formulae
		  ▪ Presenting data using charts
		  ▪ Organizing worksheet and table
		  ▪ data
		  ▪ using pivot table
			• **Task 3**
			• **Task 4**
			• **Task 5**
			
			Details may be seen at Annexure-I

Week 3	**MS Access**	• **Motivational Lecture (***For further detail please see Page No: 3& 4*)
		
		Students are introduced to:
		  ▪ Introduction
		  ▪ MS access environment
		  ▪ General fields properties
		  ▪ Lookup field properties
		  ▪ Queries and its types
		  ▪ Forms and its types
		  ▪ Reports
			• **Task 6**
			
			Details may be seen at Annexure-I

Week 4	**Database Management System (MYSQL)**	• **Success stories (***For further detail please see Page No: 3& 4*)
		
		Students are introduced to learn:
		  ▪ Introduction
		  ▪ Install MYSQL using Wamp or XAMPP server
			• **Task 7**
			• **Task 8**
			• **Task 9**
			
			Details may be seen at Annexure-I

		- MYSQL Environment - Creating Database & Table through PhpMyAdmin - Creating Database & Table through MySQL Workbench - Understanding Primary Key, Database Users & their Permissions - Importing & Exporting Databases - Database optimization - Explorer operations in phpMyAdmin	• **Monthly Test 1**
Week 5	**SQL Basics**	• **Motivational Lecture (***For further detail please see Page No: 3& 4***)** Students are introduced to: - Introduction to MySQL Queries and SELECT Clause - Queries and SELECT Clause - Data Manipulation - Language (DML) - Practical session on Insert + Update + Delete - Data Manipulation Language - Data Control Language - Data Definition Language (DDL) - Transaction Control - Language - Data Query Language - CRUD Operations	• **Task 10** • **Task 11** *Details may be seen at Annexure-I*
Week 6	**Advance SQL**	• **Success stories (***For further detail please see Page No: 3& 4***)** Students are introduced to: - Data Control Language (DCL) - Single row and aggregate functions in SQL - Group by, having clause - union - SQL set operators - sub queries - derived tables - Joins and connecting tables using SQL	• **Task 12** • **Task 13** *Details may be seen at Annexure-I*
Week 7	**Function, views and procedures in MYSQL**	• **Motivational Lecture (***For further detail please see Page No: 3& 4***)** - Views - Simple views - Complex views	• **Task 14** • **Task 15** *Details may be seen at*

		▪ Function ▪ Procedures ▪ Concepts of OLAP and OLTP	*Annexure-I*
Week 8	**Normalization, relational database structure and Data transfer**	• **Success stories (***For further detail please see Page No: 3& 4***)** Students are introduced to: ▪ Define Normalization in DBMS? ▪ Database Normal Forms ▪ Database Normalization with Examples ▪ 1NF (First Normal Form) Rules ▪ 2NF (Second Normal Form) Rules ▪ 3NF (Third Normal Form) Rules ▪ BCNF (Boyce-Codd Normal Form) ▪ 4NF (Fourth Normal Form) Rules ▪ 5NF (Fifth Normal Form) Rules ▪ use ODBC to connect Excel with MYSQL database ▪ MySQL Instance Connection ▪ Import data into Excel from mySQL	• **Task 16** • **Task 17** *Details may be seen at Annexure-I* • **Monthly Test 2**
Week 9	**Understanding of Data Mining, Data Warehouses, Big Data and cloud databases**	• **Motivational Lecture(***For further detail please see Page No: 3& 4***)** Students are introduced to: ▪ Why Data Mining ▪ Define Data Mining ▪ Define data warehouses ▪ Define big data ▪ How to deal with 'Big Data' problem ▪ Define Cloud databases (e.g., Firebase etc.) ▪ Transactional Data ▪ Class/Concept Description ▪ Mining Frequent Patterns, Associations, and Correlations ▪ Classification and Regression for Predictive Analysis ▪ Cluster Analysis / Outlier Analysis ▪ Machine Learning ▪ Mining Methodology ▪ Diversity of Database Types ▪ ETL Process	• **Task 18** • **Task 19** *Details may be seen at Annexure-I*

Week 10	Data analysis	• **Success stories (**_For further detail please see Page No: 3& 4_**)** Students are introduced to: ▪ Data Objects and Attribute Types ▪ Basic Statistical Descriptions of Data ▪ Measuring the Central Tendency: (Mean, Median, and Mode) ▪ Measuring the Dispersion of Data: Range, Quartiles, Variance ▪ Standard Deviation, and Interquartile Range ▪ Graphic Displays of Basic Statistical Descriptions of Data ▪ Data Visualization ▪ Measuring Data Similarity and Dissimilarity	• **Task 20** • **Task 21** • **Task 22** _Details may be seen at Annexure-I_
Week 11	Data Preprocessing	• **Motivational Lecture (**_For further detail please see Page No: 3& 4_**)** Students are introduced to: ▪ Preprocessing: An Overview ▪ Cleaning ▪ Integration ▪ Reduction ▪ Data Transformation and Data Discretization ▪ Data Transformation Strategies Overview ▪ Data Transformation by Normalization ▪ Discretization by Binning ▪ Discretization by Histogram Analysis ▪ Discretization by Cluster, Decision Tree, and Correlation Analysis	• **Task 23** • **Task 24** _Details may be seen at Annexure-I_
Week 12	**Data Visualization using Excel and build automatic dashboards using Excel**	• **Success stories (**_For further detail please see Page No: 3& 4_**)** Students are introduced to: ▪ ▪ Principles of Data visualization Introduction ▪ Principles of visualizations ▪ Good and Bad charts ▪ Working with Line charts, Trendlines Bar, Column Charts ▪ An introduction to Histograms ▪ Working with Excels Waterfall charts, Heat Maps and surface area charts, Stock charts	• **Task 25** • **Task 26** _Details may be seen at Annexure-I_

		- working with Combination charts in Excel, Sparklines - Tree Maps and sunbursts - Box and Whisker plots - How and why to fix an axis on dynamic and multiple charts - Automatic interactive charts - Define Dashboards - Where to start when designing a dashboard - Good and bad dashboard examples - Building the final dashboards Introduction - Dashboard protection and finishing touches - Linking and other dashboard tips	
	Start Preparing your portfolio	• **Motivational Lecture(** *For further detail please see Page No: 3& 4)* Students are introduced to: • the concept of design portfolios • the concept of present design work/projects in a professional manner • websites that provide free portfolio hosting such as Behance and Dribble • creating a portfolio • how to select work for presenting in your portfolio	
	Build your CV	Download professional CV template from any good site (https://www.coolfreecv.com or relevant) • Add Personal Information • Add Educational details • Add Experience/Portfolio • Add contact details/profile links	
Week 13	**Midterm**		
Week 14	**Learn how to tell a data visualization using Tableau**	• **Success stories (** *For further detail please see Page No: 3& 4)* Students are introduced to: - Tableau Introduction - Why Tableau - Data Visualization Tools - Creating Robust Time-series Charts - Using Parameters to Control Display and Slicing Dimensions - Incorporating a Highlight Table - Extracting Aggregated or Raw Data from the Viz - Working with Sets and Groups - Creating Bins and Box and Whisker	• **Home Assignment** • **Task 27**

		• Charts
		   ▪ Annotating Points, Marks, and Areas
		   ▪ Make an interactive dashboard for BI
			Details may be seen at Annexure-I

Week 15	**Python Programming for BI Part I**	• **Motivational Lecture (***For further detail please see Page No: 3& 4***)**
		
		Students are introduced to:
		   ▪ Installation Setup and Overview
		   ▪ IDEs and Course Resources
		   ▪ iPython/Jupyter/ Notebook Overview
		   ▪ Learning Numpy basics
		   ▪ basic Python data structures
		   ▪ Reading and Writing Text Files
		   ▪ JSON with Python
		   ▪ HTML with Python
		   ▪ Microsoft Excel files with Python
			• **Task 28**
			• **Task 29**
			
			Details may be seen at Annexure-I

	Introduction to Freelancing	• **Motivational Lecture** (*For further detail please see Page No: 3& 4*) Students are introduced to: • the concept of freelancing • how to become freelance and create a sustainable income • pros and cons of freelancing • the ethical and professional way of becoming a productive freelancer • resources available for freelancing in the field of design • how to join freelancing sites • the process of creating a freelancing profile	• **task 30**
	Create an account profile on Fiverr (at least two gigs) and Upwork	Create an account by following these steps: Step 1: Personal Info Step 2: Professional Info Step 3: Linked Accounts Step 4: Account Security	•

Week 16	**Python Programming for BI Part II**	• **Success stories (***For further detail please see Page No: 3& 4***)**
		
		Students are introduced to:
		   ▪ Combining DataFrames
		   ▪ Matplotlib, pandas, numpy
		   ▪ Pivoting, Mapping, Replace
		   ▪ Binning
		   ▪ Outliers
		   ▪ Permutation
		   ▪ GroupBy on DataFrames
			• **Task 31**
			• **Task 32**
			
			Details may be seen at Annexure-I

		▪ GroupBy on Dict and Series ▪ Splitting Applying and Combining ▪ Cross Tabulation ▪ Histograms ▪ Data Visualization using different charts	
Week 17	**Microsoft Power BI**	• **Motivational Lecture (***For further detail please see Page No: 3& 4***)** Students are introduced to: ▪ Introduction and install Power BI ▪ Explorer Microsoft Power BI Desktop ▪ Downloading Power BI & Adjusting Settings ▪ IMPORTANT: Regional Settings ▪ Helpful Power BI Resources ▪ UPDATE: New Power BI Ribbon ▪ Types of Data Connectors in Power BI Desktop ▪ The Power BI Query Editor (aka Power Query) ▪ Demo: Basic Table Transformations in Power BI ▪ Working with text tools, numerical values, date & time components ▪ Power BI Demo: Generating Index & Conditional Columns ▪ Power BI Demo: Grouping & Aggregating Records ▪ Pivoting and unpivoting data ▪ Merging Queries in Power BI Desktop ▪ Appending Queries in Power BI Desktop ▪ Configuring Power BI Data Source Settings ▪ Configuring Power BI Query Refresh Settings ▪ Additional Data Types & Categories in Power BI ▪ Defining Hierarchies in Power BI Desktop ▪ Importing Models from Excel to Power BI ▪ Power BI Data Connection Best Practices ▪	● **Task 33** ● **Task 34** *Details may be seen at Annexure-I* • **Monthly Test 3**

| Week 18 | Shaping data with power BI | • **Success stories (***For further detail please see Page No: 3& 4***)**

Students are introduced to:
• Understanding Data Tables vs. Lookup Tables
• Understanding Table Relationships vs. Merged Tables
• Creating Table Relationships in Power BI Desktop
• Snowflake vs star Schemas
• Managing & Editing Table Relationships in Power BI Desktop
• Managing Active vs. Inactive Relationships
• Connecting Multiple Data Tables in Power BI Desktop
• Understanding Filter Flow
• Two-Way Filters in Power BI Desktop
• New Power BI Desktop "Model" View
• Power BI Data Model Best Practices
• | • **Task 35**
• **Task 36**

Details may be seen at Annexure-I |
| Week 19 | Analyzing Data with DAX Calculations in Power BI | • **Motivational Lecture (***For further detail please see Page No: 3& 4***)**

Students are introduced to:
•
• Meet Data Analysis Expressions (DAX)
• Intro to DAX Calculated Columns
• Intro to DAX Measures
• Calculated Columns vs DAX measures
• Adding Columns & DAX Measures in Power BI Desktop
• Implicit vs. Explicit DAX Measures
• Filter Context Examples in Power BI
• Understanding DAX Syntax & Operators
• Common DAX Function Categories
• DAX Demo: Basic Date & Time Functions
• DAX Demo: using Conditional & Logical Functions (IF/AND/OR), Common Text Functions
• DAX Demo: Basic Math & Stats Functions
• Using COUNT Functions (COUNTA, | • **Task 37**
• **Task 38**

Details may be seen at Annexure-I |

		DISTINCTCOUNT, COUNTROWS) • IMPORTANT: Order Line Items • DAX Demo: CALCULATE & ALL • DAX Demo: CALCULATE & FILTER • DAX Demo: Iterator Functions (SUMX, RANKX) • •	
Week 20	**Visualizing Data with power BI reports**	• **Success stories (***For further detail please see Page No: 3& 4***)** Students are introduced to: • Exploring the "Report" View in Power BI Desktop • Adding Simple Objects to the Power BI Report Canvas • Inserting Basic Charts & Visuals in Power BI • Conditional Formatting • Power BI Report Formatting Options • Power BI Report Filtering Options • Power BI Demo: Exploring Data with Matrix Visuals • Power BI Demo: Filtering with Date Slicers • Key Metrics with Cards & KPI Visuals, Inserting Text Cards • Visualizing Data with Treemaps • Showing Trends with Line & Area Charts • Adding Trend Lines & Forecasts • Editing Power BI Report Interactions • AI Key Influencers Visual •	• **Task 39** • **Task 40** • **Task 41** *Details may be seen at Annexure-I*
Week 21	**Employable Project/ Assignment (6 weeks) i.e. 21-26 besides regular classes. OR On the job training (2 weeks)**	• Guidelines to the Trainees for selection of students employable project like final year project (FYP) • Assign Independent project to each Trainee • A project-based on trainee's aptitude and acquired skills. • Designed by keeping in view the emerging trends in the local market as well as across the globe. • The project idea may be based on Entrepreneur. • Leading to successful employment. • The duration of the project will be 6	

		weeks • Final viva/assessment will be conducted on project assignments. • At the end of the session, the project will be presented in a skills competition • The skill competition will be conducted on zonal, regional, and National levels. • The project will be presented in front of Industrialists for commercialization • The best business idea will be placed in the NAVTTC business incubation center for commercialization. **OR** **On the job training for 2 weeks:** • Aims to provide 2 weeks of industrial training to the Trainees as part of the overall training program • Ideal for the manufacturing trades • As an alternative to the projects that involve expensive equipment • Focuses on increasing Trainee's motivation, productivity, efficiency, and quick learning approach.	
Week 22	**Use Python with Power BI**	• **Success stories (***For further detail please see Page No: 3& 4)* ▪ Describe how to use python with Power BI ▪ Create Python visuals in Power BI Desktop ▪ Select data to create a plot ▪ Python Script editor ▪ Create a scatter plot ▪ Create a line plot with multiple columns ▪ Create a bar plot ▪ Describe the Known limitations ▪	
	How to search and apply for jobs in at least two labor marketplace countries (KSA, UAE, etc.)	• Browse the following website and create an account on each website ✓Bayt.com – The Middle East Leading Job Site ✓Monster Gulf – The International Job Portal ✓Gulf Talent – Jobs in Dubai and the Middle East	

		• Find the handy 'search' option at the top of your homepage to search for the jobs that best suit your skills.
		• Select the job type from the first 'Job Type' drop-down menu, next, select the location from the second drop- down menu.
		• Enter any keywords you want to use to find suitable job vacancies.
		• On the results page you can search for part-time jobs only, full-time jobs only, employers only, or agencies only. Tick the boxes as appropriate to your search.
		• Search for jobs by:
		  ✓ Company
		  ✓ Category
		  ✓ Location
		  ✓ All jobs
		  ✓ Agency
		  ✓ Industry	

Week 23	**Deploy your Power BI reports on server and optimized for mobile device**	• **Motivational Lecture (***For further detail please see Page No: 3& 4)* • Knowledge of local server • How to configure local server for Power BI deployment • Knowledge of posts and firewall • Deployment of BI Reports on local Server.	• **Task 26** *Details may be seen at Annexure-I*
Week 24	**Project 1 - Opportunity Analysis sample for Power BI**	• **Success stories (***For further detail please see Page No: 3& 4)* Go to https://docs.microsoft.com/en-us/power-bi/create-reports/sample-opportunity-analysis Fallow the guidelines to make the project. The Opportunity Analysis built-in sample contains a dashboard, report, and dataset for a software company that has two sales channels: direct and partner. The sales manager created this dashboard to track opportunities and revenue by region, deal size, and channel.	

		This sample relies on two measures of revenue: Revenue: A salesperson's estimate of what the revenue will be. Factored revenue: Calculated as revenue X probability% and is accepted as being a more-accurate predictor of actual sales revenue. Probability is determined by the deal's current sales stage: Lead: 10% Qualify: 20% Solution: 40% Proposal: 60% Finalize: 80%	
Week 25	**Project 2 - Supplier Quality Analysis sample for Power BI: Take a tour**	• **Motivational Lecture (***For further detail please see Page No: 3& 4***)** This industry sample dashboard and underlying report focus on one of the typical supply chain challenges: supplier quality analysis. Two primary metrics are at play in this analysis: total number of defects and the total downtime that these defects caused. **Go to and follow the instructions** **https://docs.microsoft.com/en-us/power-bi/create-reports/sample-supplier-quality** **Product Sales Data Analysis** **Marketing Campaign Insights Analysis** **Financial Performance Analysis** **Healthcare Sales Analysis** **Product Launch Analysis** **Stock Exchange Analysis** •	
Week 26	**Entrepreneurship and Final Assessment in project**	• **Success stories (** *For further detail please see Page No: 3& 4)* • Job Market Searching • Self-employment • Introduction • Fundamentals of Business Development • Entrepreneurship	**Final Assessment**

| | | • Startup Funding
• Business Incubation and Acceleration
• Business Value Statement
• Business Model Canvas
• Sales and Marketing Strategies
• How to Reach Customers and Engage
• Stakeholders Power Grid
• RACI Model, SWOT Analysis, PEST Analysis
• SMART Objectives
• OKRs
• Cost Management (OPEX, CAPEX, ROCE, etc.) | |
| | **Final Assessment** | | |

Tasks For Certificate in Data mining / Business intelligence

Task No.	Task	Description	Week
1.	**Find the career path**	• Prepare a career path related to your course and also highlight the emerging trends in the local as well as international market	**Week 1**
2.	**Work Ethics**	• Generate a report on Institute work ethics and professionalism related to your course	
3.	**Basic Excel practice**	• Make a student record dataset in excel worksheet and calculate: • SUM of all students • MAX marks • MIN marks • COUNT all students • COUNTA • Calculate AVERAGE marks	**Week-2**
4.	**Conditional**	• Make a student record and calculate Grade and practice the following functions. • IF function – check if a condition is met • NESTED IF – Multiple if conditions • Conditional Formatting – Format Excel Cells based on criteria • COUNTIF – Count cells in range which meet a certain criteria • SUMIF – Sum range based on criteria • AVERAGEIF – Calculate the average of a range based on criteria • SUMIFS – Sum cells using multiple criteria • COUNTIFS – Count cells using multiple criteria • MAXIFS – Find maximum value in a range based on criteria • MINIFS – Find minimum value in a range based on criteria • VLOOKUP, XLOOKUP	
5.	**Data visualization**	• Take a dataset and Segmentation to Columns and Rows using Pivot table	
6.	**Database in access**	• Make a sales database, make three forms for data manipulation in database tables and create at least two professional reports.	**Week 3**

7.	Manage database in MYSQL	• Install MYSQL database • Create student database using phpMyAdmin/frontend • Create students record related tables	
8.	Import and export database	• Practice of import and export database from one server to another server.	**Week 4**
9.	Use DML clause	• Practice to Select update delete data using phpMyAdmin	
10.	Practice for DML	• Select data by using select, from, where clauses. • Practice for projection and selection using different requirements. • Practice to insert row using SQL • Practice to update row using SQL • Practice to delete row using SQL • Practice to make transaction and use rollback and commit	**Week 5**
11.	Practice for DDL	• Practice to create table • drop table • truncate table	
12.	Practice for DCL and functions	• Create and Manage user and user rights • Practice to use aggregate functions (count, sum, min, max etc.)	**Week 6**
13.	Practice to create subquery and joins	• Practice to use subquery • Practice to get data from more them one table using Joins.	
14.	Practice to create views	• Create simple views • Create complex views.	**Week 7**
15.	Practice to make functions	• Create custom functions/procedures	
16.	Normalization	• Design a ERD of sales department keeping Normalization rules in mind.	
17.	Load dataset into Excel from MYSQL	• Make a connection between MS Excel and MYSQL • Import data from MYSQL into Excel worksheet	**Week 8**
18.	Firebase overview	• Explorer cloud base databases (Firebase)	**Week 9**
19.	Find Frequent Patterns	• Frequent Pattern Mining from practice dataset	
20.	Identify the outliers	• Practice to identify outliers in the datasets	
21.	Data analysis	• Practice to analysis data using Central tendency and report your findings	**Week 10**
22.	Distribution of Data analysis	• Practice to understands the distribution of data using Dispersion of Data (e.g., Range,	

		Quartiles, Variance, Standard Deviation)	
23.	**Data preprocessing**	• Practice to clean your data before use. • Remove duplicate or irrelevant observations. • Fix structural errors • Filter unwanted outliers • Handle missing data • Validate dataset	**Week 11**
24.	**Data processing using Binning and Histogram analysis**	• Practice to Data Transformation and Data • Discretization using binning and histogram Analysis	
25.	**Different type of charts**	• Use different type of charts for data visualizations.	
26.	**Make Dashboard using Excel for Business Intelligence**	• Practice to import data into Excel • Make an interactive dashboard for sales	**Week 12**
27.	**Data visualization using tableau**	• Basic practice using tableau • Create a dashboard using tableau	**Week 14**
28.	**Python Basic programming practice**	• Install python • Practice basic programming concepts using loop and control statements	**Week 15**
29.	**Python Libraries**	• Write code to load data from Excel/CSV and print dataset • Print selected records	
30.	**Create an account on Fiverr**	• Practice to make Fiverr account and make at least two professional gigs.	
31.	**Use basic libraries**	• Practice of basic python libraries (Matplotlib, pandas, numpy etc.)	**Week 16**
32.	**Data visualization using python**	• Data visualization using bar chart, scatter chart • Practice to make Histograms for data distribution	
33.	**Explorer Power BI**	• Practice to understand and use Power BI interface, components and features	**Week 17**
34.		• Import Excel data in Power BI • Connecting & Shaping Data with Power BI Desktop	
35.	**Shaping Data**	• Creating Table Relationships & Data Models in Power BI	**Week 18**
36.	**Use more tables to and create charts**	• Create different charts using more than 1 tables • Goto https://docs.microsoft.com/en-us/power-bi/create-reports/desktop-dimensional-model-report .Tutorial: From dimensional model to stunning report in Power BI Desktop	
37.	**Analyzing data using DAX**	• Practice to use different Aggregation functions • Practice to use financial functions	**Week 19**

	Calculations		
38.	**using Conditional & Logical Functions in DAX**	• using Conditional & Logical Functions (IF/AND/OR), Common Text Functions • control data with logical functions •	
39.	**Prepare basic report using Power BI**	• Tutorial: Create a decomposition tree with a Power BI sample on the following url. • https://docs.microsoft.com/en-us/power-bi/create-reports/sample-tutorial-decomp-tree	
40.	**Prepare advance reports in Power BI**	• Filtering with Date Slicers • Exploring Data with Matrix Visuals • Visualizing Data with Treemaps •	**Week 20**
41.	**Make a professional Dashboard for BI**	• Make a complete dashboard using text cards, graphs, adding trend lines, data filtering etc	
42.	**Build your CV**	Download professional CV template from any good site (https://www.coolfreecv.com or relevant) • Add Personal Information • Add Educational details • Add Experience/Portfolio • Add contact details/profile links	**Week 21-26**
43.	**Create an account profile on Fiverr (at least two gigs) and Up-work**	Create an account by following these steps: **Step 1:** Personal Info **Step 2:** Professional Info **Step 3:** Linked Accounts **Step 4:** Account Security	**Week 21-26**

44.	**How to search and apply for jobs in at least two labor marketplace countries (KSA, UAE, etc.)**	• Browse the following website and create an account on each website
		  ▪ Bayt.com – The Middle East Leading Job Site
		  ▪ Monster Gulf – The International Job Portal
		  ▪ Gulf Talent – Jobs in Dubai and the Middle East
		• Find the handy 'search' option at the top of your homepage to search for the jobs that best suit your skills.
		• Select the job type from the first 'Job Type' drop-down menu, next, select the location from the second drop-down menu.
		• Enter any keywords you want to use to find suitable job vacancies.
		• On the results page you can search for part-
			Week 21-26

		time jobs only, full-time jobs only, employers only, or agencies only. Tick the boxes as appropriate to your search.
		• Search for jobs by:
		   ▪ Company
		   ▪ Category
		   ▪ Location
		   ▪ All jobs
		   ▪ Agency
		   ▪ Industry	

Annexure-II:

Motivational Lectures

What is freelancing and how you can make money online - BBCURDU

https://www.youtube.com/watch?v=9jCJN3Ff0kA

What Is the Role of Good Manners in the Workplace? By Qasim Ali Shah | In Urdu

https://www.youtube.com/watch?v=Qi6Xn7yKIlQ

Hisham Sarwar Motivational Story | Pakistani Freelancer

https://www.youtube.com/watch?v=CHm_BH7xAXk

21 Yr Old Pakistani Fiverr Millionaire | 25-35 Lakhs a Month Income | Interview

https://www.youtube.com/watch?v=9WrmYYhr7S0

Success Story of a 23 Year - Old SEO Expert | How This Business Works | Urdu Hindi Punjabi

https://www.youtube.com/watch?v=tIQ0CWgszI0

Failure to Millionaire - How to Make Money Online | Fiverr Superhero Aaliyaan Success Story

https://www.youtube.com/watch?v=d1hocXWSpus

How To Propel Your Career- Women in Welding

https://www.youtube.com/watch?v=S_LuVnW-UdQ

Underwater Welder | I AM WOMAN | Lifetime

https://www.youtube.com/watch?v=LZiIXOkE-rc

SUGGESTIVE FORMAT AND SEQUENCE ORDER OF MOTIVATIONAL LECTURE.

Mentor

Mentors are provided an observation checklist form to evaluate and share their observational feedback on how students within each team engage and collaborate in a learning environment. The checklist is provided at two different points: Once towards the end of the course. The checklists are an opportunity for mentors to share their unique perspective on group dynamics based on various team activities, gameplay sessions, pitch preparation, and other sessions, giving insights on the nature of communication and teamwork taking place and how both learning outcomes and the student experience can be improved in the future.

Session- 1 (Communication):

Please find below an overview of the activities taking place Session plan that will support your delivery and an overview of this session's activity.

Session- 1 OVERVIEW
Aims and Objectives:
- To introduce the communication skills and how it will work   - Get to know mentor and team - build rapport and develop a strong sense of a team   - Provide an introduction to communication skills   - Team to collaborate on an activity sheet developing their communication, teamwork, and problem-solving   - Gain an understanding of participants' own communication skills rating at the start of the program

Activity:	Participant Time	Teacher Time	Mentor Time
Intro Attend and contribute to the scheduled.			
Understand good communication skills and how it works.			
Understand what good communication skills mean			
Understand what skills are important for good communication skills			

Key learning outcomes:	Resources:		Enterprise skills developed:
Understand the communication skills and how it works.	- Podium - Projector - Computer		- Communication - Self Confidence - Teamwork

• Understand what communication skills mean • Understand what skills are important for communication skills	• Flip Chart • Marker	

Schedule	Mentor Should do
Welcome: **5 min**	Short welcome and ask the **Mentor** to introduce him/herself. Provide a brief welcome to the qualification for the class. Note for Instructor: Throughout this session, please monitor the session to ensure nothing inappropriate is being happened.
Icebreaker: **10 min**	Start your session by delivering an icebreaker, this will enable you and your team to start to build rapport and create a team presentation for the tasks ahead. The icebreaker below should work well at introductions and encouraging communication, but feel free to use others if you think they are more appropriate. It is important to encourage young people to get to know each other and build strong team links during the first hour; this will help to increase their motivation and communication throughout the sessions.
Introduction & Onboarding: **20mins**	Provide a brief introduction of the qualification to the class and play the "Onboarding Video or Presentation". In your introduction cover the following: 1. Explanation of the program and structure. (Kamyab jawan Program) 2. How you will use your communication skills in your professional life. 3. Key contacts and key information – e.g. role of teacher, mentor, and SEED. Policies and procedures (user agreements and "contact us" section). Everyone to go to the Group Rules tab at the top of their screen, read out the rules, and ask everyone to verbally agree. Ensure that the consequences are clear for using the platform outside of hours. (9am-8pm) 4. What is up next for the next 2 weeks ahead so young people know what to expect (see pages 5-7 for an overview of the challenge). Allow young people to ask any questions about the session topic.
Team Activity Planning: **30 minutes**	MENTOR: Explain to the whole team that you will now be planning how to collaborate for the first and second collaborative Team Activities that will take place outside of the session. There will not be another session until the next session so this step is required because communicating and making decisions outside of a session requires a different strategy that must be agreed upon so that everyone knows what they are doing for this activity and how. • "IDENTIFY ENTREPRENEURS" TEAM ACTIVITY • "BRAINSTORMING SOCIAL PROBLEMS" TEAM

	ACTIVITY" *As a team, collaborate on a creative brainstorm on social problems in your community. Vote on the areas you feel most passionate about as a team, then write down what change you would like to see happen.* Make sure the teams have the opportunity to talk about how they want to work as a team through the activities e.g. when they want to complete the activities, how to communicate, the role of the project manager, etc. Make sure you allocate each young person a specific week that they are the project manager for the weekly activities and make a note of this. Type up notes for their strategy if this is helpful - it can be included underneath the Team Contract.
Session Close: **5 minutes**	**MENTOR:** Close the session with the opportunity for anyone to ask any remaining questions. **Instructor:** Facilitate the wrap-up of the session. A quick reminder of what is coming up next and when the next session will be.

SUCCESS STORY

S. No	Key Information	Detail/Description
1.	**Self & Family background**	**Danyal Saleem,** who lives in Mirpur (AJK), is an example of how hard work and perseverance can reap rich rewards when bidding for projects online. The graphic designer works exclusively on an online freelancing platform and has earned, on average, **US$20,000** per month for the past several months. But this isn't a story of overnight success – Danyal has had to work hard to differentiate himself and stay true to his goal. It was a full year later, in May 2017, when Danyal finally decided to jump in. He signed up for one of the numerous sites that connect designers or coders with people or companies that have small projects, like designing a logo or building a website. He had already started a small business to help pay for his college education, so he was nervous and apprehensive about the decision. "I gave myself two or three months at most. If I didn't succeed, then I would go back to running the business as it was showing potential," he says. **If at first, you don't succeed, try try again**
2.	**How he came on board NAVTTC Training/ or got trained through any other source**	Certification in graphic designing from STEPS(NAVTTC partner institute)
3.	**Post-training activities**	**Danyal's** area of expertise is in **graphic design**. In his first month using Fiverr, he pitched mostly for projects centered around logo designing. But it wasn't so simple. In the first few weeks, he didn't hear back from even a single client, despite pitching for dozens of projects. "I needed to understand what worked, so I read blogs, participated in forums, and analyzed profiles of successful freelancers. It was an uphill struggle, but I didn't want to give up," he explains. Danyal says he understands why clients would be apprehensive giving projects to untested freelancers. They have hundreds of options to choose from, he explains, and to give a project to someone with no experience requires a strong leap of faith.

		A slow stream of projects started to come Danyal's way. Within a few months, he was landing an average of a hundred projects every month, with a large number of repeat clients. He also expanded the range of his professional services, branching out from logo design to business cards, banners, Facebook cover pages, letterheads, and stationery.
		But he's had to face his fair share of challenges too. The shoddy state of internet infrastructure in his city, Mirpur, threatened to derail his freelancing career. "Sometimes I haven't had connectivity for two days straight," he explains. "That's unthinkable for someone who makes his livelihood on the internet."
4.	**Message to others** **(under training)**	Take the training opportunity seriously Impose self-discipline and ensure regularity Make Hard work pays in the end so be always ready for the same.

Note: Success story is a source of motivation for the trainees and can be presented in several ways/forms in a NAVTTC skill development course as under: -

1. To call a passed out successful trainee of the institute. He will narrate his success story to the trainees in his own words and meet trainees as well.
2. To see and listen to a recorded video/clip (5 to 7 minutes) showing a successful trainee Audio-video recording that has to cover the above-mentioned points.*
3. The teacher displays the picture of a successful trainee (name, trade, institute, organization, job, earning, etc) and narrates his/her story in the teacher's own motivational words.

   * *The online success stories of renowned professional can also be obtained from **Annex-II***

Workplace/Institute Ethics Guide

Work ethic is a standard of conduct and values for job performance. The modern definition of what constitutes good work ethics often varies. Different businesses have different expectations. Work ethic is a belief that hard work and diligence have a moral benefit and an inherent ability, virtue, or value to strengthen character and individual abilities. It is a set of values-centered on the importance of work and manifested by determination or desire to work hard.

The following ten work ethics are defined as essential for student success:

1. **<u>Attendance</u>:**

   Be at work every day possible, plan your absences don't abuse leave time. Be punctual every day.

2. **<u>Character</u>:**

   Honesty is the single most important factor having a direct bearing on the final success of an individual, corporation, or product. Complete assigned tasks correctly and promptly. Look to improve your skills.

3. **<u>Team Work:</u>**

   The ability to get along with others including those you don't necessarily like. The ability to carry your weight and help others who are struggling. Recognize when to speak up with an idea and when to compromise by blend ideas together.

4. **<u>Appearance</u>:**

   Dress for success set your best foot forward, personal hygiene, good manner, remember that the first impression of who you are can last a lifetime

5. **<u>Attitude</u>:**

   Listen to suggestions and be positive, accept responsibility. If you make a mistake, admit it. Values workplace safety rules and precautions for personal and co-worker safety. Avoids unnecessary risks. Willing to learn new processes, systems, and procedures in light of changing responsibilities.

6. **<u>Productivity</u>:**

   Do the work correctly, quality and timelines are prized. Get along with fellows, cooperation is the key to productivity. Help out whenever asked, do extra without being asked. Take pride in your work, do things the best you know-how. Eagerly focuses energy on accomplishing tasks, also referred to as demonstrating ownership. Takes pride in work.

7. **Organizational Skills:**

   Make an effort to improve, learn ways to better yourself. Time management; utilize time and resources to get the most out of both. Take an appropriate approach to social interactions at work. Maintains focus on work responsibilities.

8. **Communication:**

   Written communication, being able to correctly write reports and memos. Verbal communications, being able to communicate one on one or to a group.

9. **Cooperation:**

   Follow institute rules and regulations, learn and follow expectations. Get along with fellows, cooperation is the key to productivity. Able to welcome and adapt to changing work situations and the application of new or different skills.

10. **Respect:**

    Work hard, work to the best of your ability. Carry out orders, do what's asked the first time. Show respect, accept, and acknowledge an individual's talents and knowledge. Respects diversity in the workplace, including showing due respect for different perspectives, opinions, and suggestions.